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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/522,717

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ABE-030

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12/23/2008

EXAMINER

BLAN, NICOLE R

ART UNIT

PAPER NUMBER

1792

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,717	Applicant(s) TAKEMURA ET AL.	
	Examiner NICOLE BLAN	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01282005, 12152005</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 14-17 and 26-29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an “organic solvent” that is a gas (see use of porous member on pages 11 and 17), does not reasonably provide enablement for the organic solvent being in a liquid state. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The disclosure clearly states on pages 11 and 17, the porous polymer membrane refers to a membrane ... that allows a gas to pass there through but *not* a liquid [emphasis added]. Therefore, it is unclear how the limitation as currently stated allows a solvent (which refers to a chemical as a liquid, not a gas) is able to pass through the membrane into the water when the specification clearly states the membrane allows a gas to pass through not a liquid.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 1, 6 and 18: Applicant's state "... said water is added with an organic solvent..." in claim 1 and "... a solvent adding step for adding an organic solvent ... to said water" in claims 6 and 18. Which water is the applicant referring to? Is it the water used to produce ozone water or is it the ozone water itself? It is unclear what the applicants are trying to claim. For the purpose of examination, the Examiner is interpreting the claim to be adding an organic solvent to the water used to produce the ozone water.

Claim 2-5, 14-17 and 26-29: These claims are indefinite for the same reason as claims 1, 6 and 18 above. In these claims, applicant's state "... for adding said organic solvent to the water ...". Again, it is unclear as to which water the applicants are referring to. Because the independent claims are being interpreted as to be adding an organic solvent to the water used to produce the ozone water, the dependent claims (claims 14-17 and 26-29) are interpreted the same way.

Claims 14-17 and 26-29: Applicant's state "... adding step for adding said organic solvent to the water is performed through a porous polymer membrane...". It is unclear if the liquid solvent is being added to the water through a porous polymer membrane.

Claims 7-13 and 19-25 are rejected as being dependent upon rejected claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 6-8 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oya et al. (U.S. PGPub 6,517,999, hereinafter ‘999).

Claims 1-3, 6-8 and 18-20: ‘999 teaches a method for cleaning semiconductor substrates using a solution comprising an ozone gas dissolved in a mixture of pure water and an organic solvent, such as isopropanol [the organic solvent is inherently added] [col. 5, line 55-col. 6, line 46; col. 12, lines 37-41]. Thus, ozone water is formed. It does not explicitly teach an organic solvent containing an amount of organic carbon *capable of* suppressing a reduction of the half-life period of ozone. It has been held that the recitation that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

‘999 does not explicitly teach the amount of organic solvent to add is in a range of 0.1 µg/liter to 0.1 g/liter. The concentration of the cleaning solution is a result effective variable. The concentration required could be dependent upon many factors such as the type of contaminant to be removed (e.g. a greater concentration may be required to remove certain contaminants) and the quantity/size of the contaminant to be removed. Without evidence of unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the appropriate concentration of the cleaning solution based on the contaminants to be removed for the predictable results of cleaning the component of a semiconductor processing system, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

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7. Claims 4, 5, 9-17 and 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘999 in view of JP 11-029795 (hereinafter JP ‘795).

Claims 4, 5, 9, 10, 21 and 22: ‘999 teaches the limitations of claims 1, 6 and 18 above. ‘999 teaches forming ozone water using pure water, but it does not explicitly teach that the water is ultra-pure water. However, JP ‘795 teaches a method of forming ozone water using ultra-pure water for use in cleaning semiconductors [see page 2 of translation, paragraph 4, lines 1-2]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use ultra-pure water as taught by JP ‘795 in place of the pure water disclosed by ‘999 for generating ozone water because JP ‘795 teaches that ultra-pure water is suitable for generating ozone water to be used in the cleaning of semiconductors.

Claims 11, 12, 23 and 24: ‘999 teaches the limitations of claims 6, 8, 18 and 20, respectively, above. ‘999 does not explicitly teach that ozone is obtained by silent discharge process in which ozone is generated from an oxygen gas. However, JP ‘795 teaches a method for cleaning semiconductors using an ozone water/solvent solution in which the ozone gas is generated by a conventional method of silent discharge in oxygen gas [see page 3 of translation, paragraph 6]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conventional ozone generation process disclosed by JP ‘795 as the process of generating ozone in ‘999 because JP ‘795 teaches it is a conventional method used to generate ozone for use in a solution to clean semiconductor substrates.

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Claims 13 and 25 are rejected over '999 and JP '795 as taught by claims 9 and 21, respectively, above and for the reason applied to claims 11, 12, 23 and 24 above.

Claims 14, 15, 26 and 27: '999 teaches the limitations of claims of claims 6, 8, 18 and 20, respectively, above. '999 does not teach how the solvent is added to the ozone water. However, JP '795 teaches a conventional method for supplying a solvent to the ozone by adding the solvent to the ultra-pure water before hand and then contacting the mixture with the ozone

Claims 16, 17, 28 and 29 are rejected over '999 and JP '795 as taught by claims 9, 11, 21 and 23, respectively, above and for the reason applied to claims 14, 15, 26 and 27 above.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gottschalk et al. (U.S. Patent 6,786,976).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE BLAN whose telephone number is (571)270-1838. The examiner can normally be reached on Monday - Thursday 8-5 and alternating Fridays 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. B./

Examiner, Art Unit 1792

/Alexander Markoff/

Primary Examiner, Art Unit 1792